REMARKS

Claims 2, 4-7, 9, 10, 12-20 and 27-30 are pending herein. Claim 18 has been allowed. Claims 27 and 28 have been amended as supported by Fig. 1, for example. New claims 29 and 30 are added hereby. Attached hereto as pages 8 and 9, pursuant to Rule 1.121(c)(1)(ii), is a marked-up version of the amended claims.

1. Claims 2, 4-7, 9, 10, 12-17, 19, 20, 27 and 28 were rejected under §103(a) over Culp (U.S. Patent No. 5,182,484), Culp (U.S. Patent No. 5,939,816) or Sawada in view of Rudnick, Kohno or Heinz. To the extent that this rejection might be applied against the amended claims, it is respectfully traversed.

With reference to Fig. 4 of the present application, pending independent claims 27 and 28 each recite, among other things, that a substantially trapezoidal laminate includes narrower and wider surfaces (f2) and (f1), respectively, lying substantially in parallel to one another and having first and second surfaces (f4) and (f3), respectively, opposed to one another between the narrower and wider surfaces. Claims 27 and 28 have each been amended to clarify that a first external electrode (14A), which is formed on first surface (f4), extends to substantially the same point along portions of the narrower and wider surfaces (f2) and (f1), respectively. Claims 27 and 28 have each been further amended to clarify that a second external electrode (15A), which is formed on second surface (f3), extends along only wider surface (f1) of the laminate.

All of the drawings in Rudnick, Kohno and Heinz show that if only one external electrode (e.g., electrode (32) shown in Fig. 1 of Kohno) extends onto both of the upper and lower surfaces of the actuator (e.g., first and second major surfaces (27) and (28), respectively, shown in Fig. 1 of Kohno), the external electrode extends to positions on the actuator body upper and lower surfaces that are not equal with respect to one another. Conversely, with reference to Fig. 4 of the present application, pending independent claims 27 and 28 each recite that if only one external electrode (e.g., first external electrode (14A)) extends onto wider surface (f1) and narrower surface (f2) of the laminate, that external electrode extends to substantially the same point along portions of the narrower and wider

surfaces (f2) and (f1), respectively. Therefore, even if the "lead architecture" disclosed in Culp '484, Culp '816 and Sawada were substituted with the "solid state leads" shown in any one of Heinz, Kohno and Rudnick (as asserted on page 2 of the Office Action), there would still be no disclosure or suggestion that a first external electrode extends to substantially the same point along portions of the narrower and wider surfaces and a second external electrode extends only along the wider surface of the laminate, as recited in pending claims 27 and 28.

In view of the foregoing, reconsideration and withdrawal of the §103(a) rejection are respectfully requested.

New independent claims 29 and 30 have been added to further distinguish the present application over the applied art of record. For example, new claims 29 and 30 each recite that an operating portion of the piezoelectric/electrostrictive layers that is sandwiched between the internal electrodes is substantially in the shape of a rectangular plate having substantially parallel sides (this structure is most clearly illustrated in Fig. 4 of the present application). Specifically, Fig. 4 shows that the portion of P/E layer (11B) that is sandwiched between internal electrode layers (12A) and (12B) is a P/E layer operating portion. One end of the P/E layer operating portion is defined by an imaginary line connecting the end of internal electrode 12(A) with a portion of internal electrode 12(B) on the right side of P/E laminate 10. Another end of the P/E layer operating portion is defined by an imaginary line connecting the end of internal electrode 12(B) with a portion of internal electrode 12(A) on the left side of P/E laminate 10. Accordingly, the P/E layer operating portion is substantially in the shape of a rectangular plate having sides that are substantially parallel to one another. That is, the ends of the above-discussed P/E layer operating portion are not slanted with respect to one another. The applied art, discussed below, does not disclose or suggest the rectangular plate P/E layer operating portion limitation recited in claims 29 and 30.

Each of Culp '484, Culp '816 and Sawada disclose actuators which include P/E layer operating portions that are trapezoidal-shaped. For example, the P/E layer operating portions (i.e., those portions in which a P/E layer is sandwiched between internal electrodes) of the actuator shown in Fig. 1 of Culp '484 extend the entire distance from one side of the actuator

body (the side closest to numeral 12) to the opposite side of the actuator body (the side from which leads 22 protrude). Because at least one side surface of the P/E actuator body is angled or slanted with respect to the opposite side surface of the actuator body, the P/E layer operating portions are not substantially in the shape of a rectangular plate having substantially parallel sides, as claimed. Similar structures are shown in each of Culp '816 and Sawada. Accordingly, new claims 29 and 30, each of which recite the above-discussed rectangular plate P/E layer operating portions limitation, are patentably distinct over the applied art of record (i.e., Culp '484, Culp '816 and Sawada).

If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

February 14, 2003
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27. (Amended) A piezoelectric/electrostrictive element comprising:

a substantially trapezoidal laminate having narrower and wider surfaces lying substantially in parallel to one another and first and second surfaces opposed to one another between the narrower and wider surfaces, the first and second surfaces being inclined at given angles with respect to one of the narrower and wider surfaces, said laminate comprising a plurality of piezoelectric/electrostrictive layers and a plurality of internal electrodes each of which is disposed between an adjacent two of the piezoelectric/electrostrictive layers, the internal electrodes being divided into first and second groups, each of the first group internal electrodes lying over one of the second group internal electrodes and being separated by one of the piezoelectric/electrostrictive layers;

a first external electrode formed on the first surface of said laminate and extending to substantially the same point along portions of the narrower and wider surfaces of said laminate, said first external electrode being coupled to the first group internal electrodes; and

a second external electrode formed on the second surface of said laminate and extending along only the wider surface of said laminate, said second external electrode being coupled to the second group internal electrodes.

28. (Amended) A piezoelectric/electrostrictive device comprising a piezoelectric/electrostrictive element including a substantially trapezoidal laminate having narrower and wider surfaces lying substantially in parallel to one another and first and second surfaces opposed to one another between the narrower and wider surfaces, the first

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and second surfaces being inclined at given angles with respect to one of the narrower and wider surfaces, said laminate comprising a plurality of piezoelectric/electrostrictive layers and a plurality of internal electrodes each of which is disposed between an adjacent two of the piezoelectric/electrostrictive layers, the internal electrodes being divided into first and second groups, each of the first group internal electrodes lying over one of the second group internal electrodes and being separated by one of the piezoelectric/electrostrictive layers; a first external electrode formed on the first surface of said laminate and extending to substantially the same point along portions of the narrower and wider surfaces of the laminate, said first external electrode being coupled to the first group internal electrodes; and a second external electrode formed on the second surface of said laminate and extending along only the wider surface of the laminate, said second external electrode being coupled to the second group internal electrodes, wherein said piezoelectric/electrostrictive element is bonded to a surface of a movable plate on a side of the narrower surface of said laminate.

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